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(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
14 November 2002 (14.11.2002)

PCT

(10) International Publication Number
WO 02/091102 A2

(51) International Patent Classification[7]: G06F

(21) International Application Number: PCT/US01/14386

(22) International Filing Date: 2 May 2001 (02.05.2001)

(25) Filing Language: English

(26) Publication Language: English

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(81) Designated States *(national)*: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW.

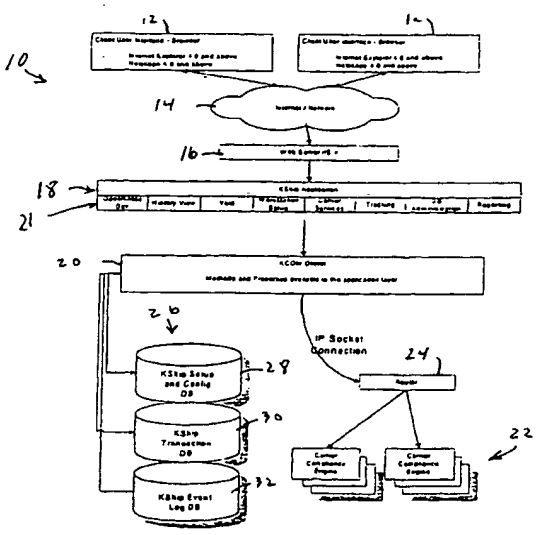
(84) Designated States *(regional)*: ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).

Published:

without international search report and to be republished upon receipt of that report

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: METHODS AND APPARATUS FOR MANAGING THE SHIPMENT OF GOODS



(57) Abstract: The present invention is an apparatus and method for managing the shipping of goods. The invention provides a reliable way to view, transact, trace and control goods as they move through the supply chain. In a preferred embodiment, the invention includes a scalable system that allows companies to integrate carrier rating, routing and package content information into existing business systems. The invention provides a platform that marries advanced carrier compliance technology with advanced technology to hendle large numbers of transactions. The shipping system of the invention provides centralization of the business processes of buyer, supplier and carrier regardless of their physical location worldwide. The shipping system also provides real-time access to supply chain information and full multicarrier compliance. As a result, timely and reliable order fulfillment can be achieved in an e-commerce environment.

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METHODS AND APPARATUS FOR MANAGING THE SHIPMENT OF GOODS

FIELD OF THE INVENTION

The present invention relates to the field of shipping systems, and more particularly to methods and apparatus for managing the shipment of goods.

BACKGROUND OF THE INVENTION

A variety of systems have been developed to facilitate the ordering and shipment of goods. Very simple and low cost systems use mail manifest systems and postage meters to automate the process of weighing packages and printing carrier manifests. However, such systems do not facilitate the selection of the lowest cost carrier for a given order because they cannot take into account the order size, package size and time in transit when selecting the carrier. Also, these systems are not integrated with other shipping functions such as customer ordering, order fulfillment and order packaging. Because these functions are performed by separate systems, they require additional time and expense as an order is transferred and input from one system to another.

More complex systems that do integrate some of these functions have been developed. However, these systems are too expensive for most businesses and require additional staff for their set up and maintenance. Even these existing systems, despite their high cost, have a number of limitations. They are limited in the information available. For example, precise information regarding the contents and location of packages as they move through a supply chain is not available. This is because such stand-

alone systems are not integrated with systems of customers and suppliers. Also, these systems are not easily expanded and modified as a user's volume and needs change.

With the growth of Internet commerce there is a need for greater visibility and control of the shipment of individual packages. Hence, there is a need for a low cost shipment processing system that integrates the functions of order taking, order fulfillment, order shipping, carrier selection, and package tracking. Also there is a need for a system that can be easily expanded to larger scale operation as companies and their shipping volumes grow. There is also a need for companies to be able to provide their customers with accurate and timely information including shipping charges and tracking numbers for items ordered over the Internet and via conventional phone ordering systems. More generally, there is a need for trading communities to gain visibility of the orders in-transit within the supply chain.

SUMMARY OF THE INVENTION

The present invention is an apparatus and method for managing the shipping of goods. The invention provides a reliable way to view, transact, trace and control goods as they move through the supply chain. In a preferred embodiment, the invention includes a scalable system that allows companies to integrate carrier rating, routing and package content information into existing business systems. The invention provides a platform that marries the advanced carrier compliance technology with advanced technology to handle large numbers of transactions. In one aspect of the invention the shipping system includes a user interface for enabling a user to input and receive information and to control the operation of the shipping system. A computer network is connected to the user interface and connects the user interface to the components of the shipping system. Application software is connected to the computer network for managing user access to the features and functions of the shipping system. An interface

object allows the application software to receive carrier compliance information. A carrier compliance engine manages shipping and carrier compliance and

a router application manages a plurality of copies and instances of the carrier compliance engine.

The shipping system of the invention provides centralization of the business processes of buyer, supplier and carrier regardless of their physical location worldwide. The shipping system also provides real-time access to supply chain information and full multi-carrier compliance. As a result, timely and reliable order fulfillment can be achieved in an e-commerce environment.

BRIEF DESCRIPTION OF THE FIGURES

FIG. 1 shows a diagram of a preferred embodiment of the invention.

FIG. 2 shows a diagram of the system architecture of a preferred embodiment of the invention.

DETAILED DESCRIPTION OF THE DRAWINGS

The following detailed description relates to systems and methods for managing the shipment of goods. Although the invention is described herein using specific materials to create the particular embodiments shown herein, many other kinds of configurations and materials can be used to implement the invention and still benefit from the use of the inventive methods and structures described herein and are considered to be within the teachings of the present invention.

Referring now to Figure 1 there is shown a simplified diagram of a shipping system 10 in accordance with one embodiment of the invention. The shipping system includes a plurality of client interfaces 12 that include, for example, a conventional PC running an Internet browser, such as Internet Explorer or Netscape. The client interfaces are connected to a computer network 14, which may

comprise a Local Area Network or a Wide Area Network such as the Internet.

The shipping 10 is configured to be used by a variety of persons involved in the supply chain of goods in commerce. These persons include customers selecting and placing orders for goods, businesses taking orders for goods, vendors shipping goods to these businesses or to customers, and carriers who ship the goods. A wide variety of modes of commerce may be serviced by the shipping system of the present invention depending on the user's needs and the particular configuration. For example, the shipping system may be used in an e-commerce transaction where the customer uses the shipping system 10 to select goods, order goods, and track the shipment of goods. Alternatively, the shipping system 10 may be used in any combination of conventional and e-commerce transactions.

A web server 16 communicates with the user interface 12 through the Internet 14. Additional details of the Web server of the present invention are shown in Figure 2. The web server 16 is coupled to a set of application software programs called the KShip application 18. In particular, the web server 16, running IIS 4 software, loads the KShip application 18. The KShip application 18 loads a software object called the KCOM object 20. The KShip application 18 also manages the user access to the features and functions of the shipping system 10. Using a series of applications 21, the KShip application 18 keeps track of the status of each user and where they are in a particular process.

The KCOM object 20 is a Microsoft object that allows other applications easy access to carrier compliance information through the exposure of methods and properties. While the COM interface is preferred, other object interfaces may be used. The KCOM object 20 also manages the storage of information required to meet carrier and customer requirements. The KCOM object 20 is a stateless object, which means that it does not remember the current status of any one user or transaction. This allows for maximum throughput and transaction volume.

The KCOM object 20 is coupled to a plurality of carrier compliance engines 22 through a router 24. The carrier compliance engine 22 is preferably the APSS carrier compliance engine available from Kewill, Systems plc. Additional details of the APSS carrier compliance engine are available on the Kewill website at www.kewill.com, the contents of which, at the time of filing of the present patent application, are herein incorporated by reference in their entirety. In general, the carrier compliance engine 22 in the preferred embodiment is a Windows-based application that automates shipping for all major carriers including Airborne, BAX Global, DHL, Emery, FedEx, UPS, USPS, and WPX. The carrier compliance engine 22 also provides LTL automation for local and regional carriers. The carrier compliance engine 22 manages multi-carrier compliance, including electronic manifesting, labeling, and many reporting capabilities. The carrier compliance engine 22 performs extensive postal manifesting. When implemented using the Kewill APSS, the carrier compliance engine 22 performs extensive postal manifesting and is certified to support UPS OnLine Compatibility and the FedEx Powership Server for both domestic and international shipping.

The shipping system 10 is enabled by the carrier compliance engine 22 to allow users access to shipping information, to obtain shipping information and shipping status, to shop carrier rates, to submit ship requests and to track shipment status, even to obtain carton level information. Each carrier compliance engine 22 can handle multiple shipping origins, up to 30 in the preferred embodiment. Moreover, the KCOM object can handle multiple carrier compliance engines 22, up to four in the preferred embodiment.

A database unit 26 is coupled to the KCOM object 20 for storage of information needed by the KCOM object to perform its various functions. The database unit 26 includes a KShip setup and configuration database 28, a KShip Transaction database 30 and a KShip Event database 32.

Figure 2 shows the detailed architecture of another embodiment of a shipping system 34 in accordance with the invention. The client user interface 34 shown in this embodiment is a low-volume front office client. In addition, another user interface 38, consisting of a medium volume back office client is also shown. The web server 38 is similar to the web server 16 shown in Figure 1. The KShip application 40 that is instantiated by the web server 38 includes a KShip application flow engine 42 in addition to the eight applications 44, which are the same as those shown in Figure 1.

The KCOM object 46 that is instantiated by the KShip application 40 runs XML and TCP/IP languages. A COM interface 48 controls access to the database 50 and to the KShip carrier compliance engines through the router 54. Additional details of the shipping system 10 of the invention are shown in the attached Appendix.

While the particular METHODS AND APPARATUS FOR MANAGING THE SHIPMENT OF GOODS as herein shown and described in detail is fully capable of attaining the above-described objects of the invention, it is to be understood that it includes the presently preferred embodiments of the present invention and is thus representative of the subject matter which is broadly contemplated by the present invention, that the scope of the present invention fully encompasses other embodiments which may become obvious to those skilled in the art, and that the scope of the present invention is accordingly to be limited by nothing other than the appended claims, in which reference to an element in the singular is not intended to mean "one and only one" unless explicitly so stated, but rather "one or more". All structural and functional equivalents to the elements of the above-described preferred embodiment that are known or later come to be known to those of ordinary skill in the art are expressly incorporated herein by reference and are intended to be encompassed by the present claims. Moreover, it is not necessary for a device or method to address each and every problem sought to be solved by the present

invention, for it to be encompassed by the present claims. Furthermore, no element, component, or method step in the present disclosure is intended to be dedicated to the public regardless of whether the element, component, or method step is explicitly recited in the claims. No claim element herein is to be construed under the provisions of 35 U.S.C. §112, sixth paragraph, unless the element is expressly recited using the phrase "means for" or "steps for".

I CLAIM:

1. A shipping system for managing the shipment of goods comprising:

user interface for enabling a user to input and receive information and to control the operation of the shipping system;

computer network connected to the user interface and connecting the user interface to the components of the shipping system;

application software connected to the computer network for managing user access to the features and functions of the shipping system;

interface object for allowing the application software to receive carrier compliance information;

carrier compliance engine for managing shipping and carrier compliance; and

router application for managing a plurality of copies and instances of the carrier compliance engine.

2. A shipping system according to Claim 1 wherein the application software includes a means for determining and communicating the status of each user in the shipping process.

3. A shipping system according to Claim 2 wherein the application software includes software for performing at least one of the following functions: status reporting, database administration, workstation setup, and operation history.

4. A shipping system according to Claim 1 wherein the interface object is a stateless software object.

5 A shipping system according to Claim 4 wherein the interface object in a COM object.

6. A shipping system according to Claim 1 wherein the interface object further manages the storage of information required to meet carrier and customer requirements

7. A shipping system according to Claim 1 wherein the carrier compliance engine performs at least one of the following functions: mail manifesting, reporting shipping information, reporting shipping status, determining the lowest cost carrier among a plurality of carriers for a particular shipment.

8. A shipping system according to Claim 1 wherein the carrier compliance can manage up to 30 shipping origins.

9. A shipping system, according to Claim 1 wherein the router manages at least four separate carrier compliance engines.

10. A shipping system according to Claim 1 further comprising a database coupled to the interface object for storing information relating to setup and configuration, particular transactions and particular shipping events.

11. A shipping system according to Claim 1 wherein the computer network includes a Local Area Network.

12. A shipping system according to Claim 1 wherein the computer interface includes a Wide Area Network.

13. A shipping system according to Claim 12 wherein the Wide Area Network includes the Internet.

14. A shipping system according to Claim 13 wherein the user

interface includes an Internet browser.

15. A scalable shipping system for managing the ordering and shipment of goods over the Internet comprising:

a plurality of user interfaces including an Internet browser for enabling a user to input and receive information and to control the operation of the shipping system, the user interfaces being connected to the Internet;

web server connected to the Internet and to the user interfaces;

application software for managing user access to the features and functions of the shipping system;

interface object for allowing the application software to receive carrier compliance information, the interface object being a stateless software object;

carrier compliance engine for managing shipping and carrier compliance for a plurality of users and a plurality of carriers, the number of users and carriers being modifiable without changing the interface object; and

router application for managing a plurality of copies and instances of the carrier compliance engine.

16. A shipping system according to Claim 15 wherein the application software determines and communicates the status of each user in

the shipping process.

17. A shipping system according to Claim 16 wherein the application software includes software for performing at least one of the following functions: status reporting, database administration, workstation setup, and operation history.

18. A shipping system according to Claim 17 wherein the interface object in a COM object.

19. A shipping system according to Claim 15 wherein the interface object further manages the storage of information required to meet carrier and customer requirements

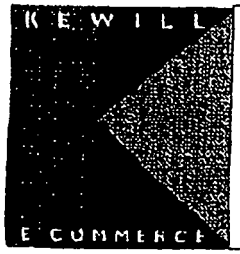
20. A shipping system according to Claim 15 wherein the carrier compliance engine performs at least one of the following functions: mail manifesting, reporting shipping information, reporting shipping status, determining the lowest cost carrier among a plurality of carriers for a particular shipment.

21. A shipping system according to Claim 15 wherein the carrier

compliance can manage up to 30 shipping origins.

22. A shipping system, according to Claim 15 wherein the router manages at least four separate carrier compliance engines.

23. A shipping system according to Claim 15 further comprising a database coupled to the interface object for storing information relating to setup and configuration, particular transactions and particular shipping events.



Purpose of the Pack Application

- Collect Carton level information
  - Carton #1
    - Order/PO
      - Item #1
        - Item Information
      - Item #2
        - Item Information
    - Order/PO
      - Item #1
        - Item Information
  - Carton #2
- Provide "Hub" with required information for compliance
- Print "Hub" compliant documentation

Pack Applicatio

- What will be available
  - Basic "Pack" application
  - XML API (Application Program Interface) to the Business Portal
  - XML API to retrieve data from the Business Portal

Next Generation Tracer

- Based on Microsoft VBA
- Industry standard language
  - Easier to hire qualified technicians
- Continued ease of connectivity
  - Old way: SendTo("Host1", "XPKGID", "12345")
  - New way: KShip.sendto.vars.xpkgid = "12345"
- Faster processing
- Compiled programs

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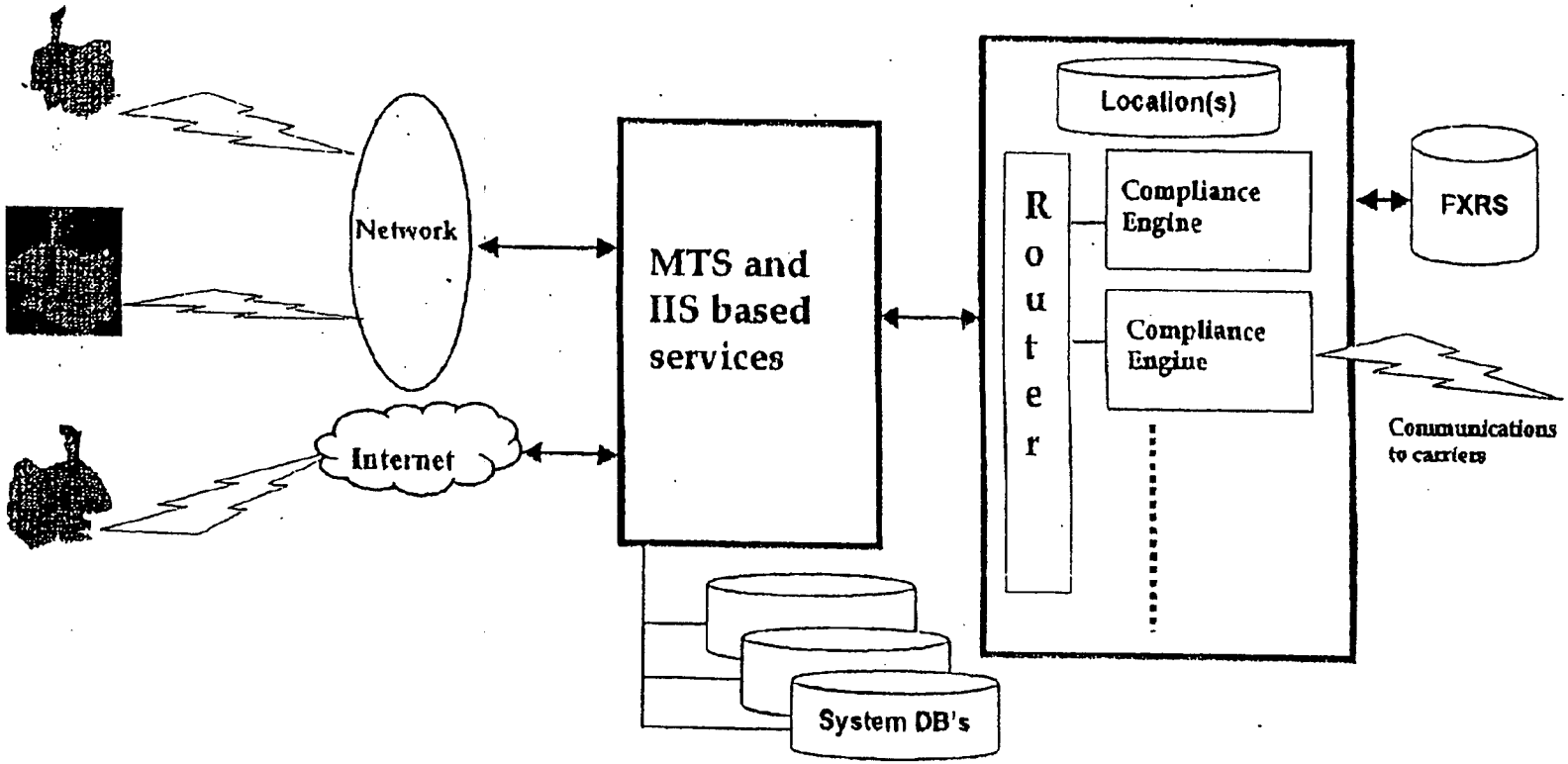
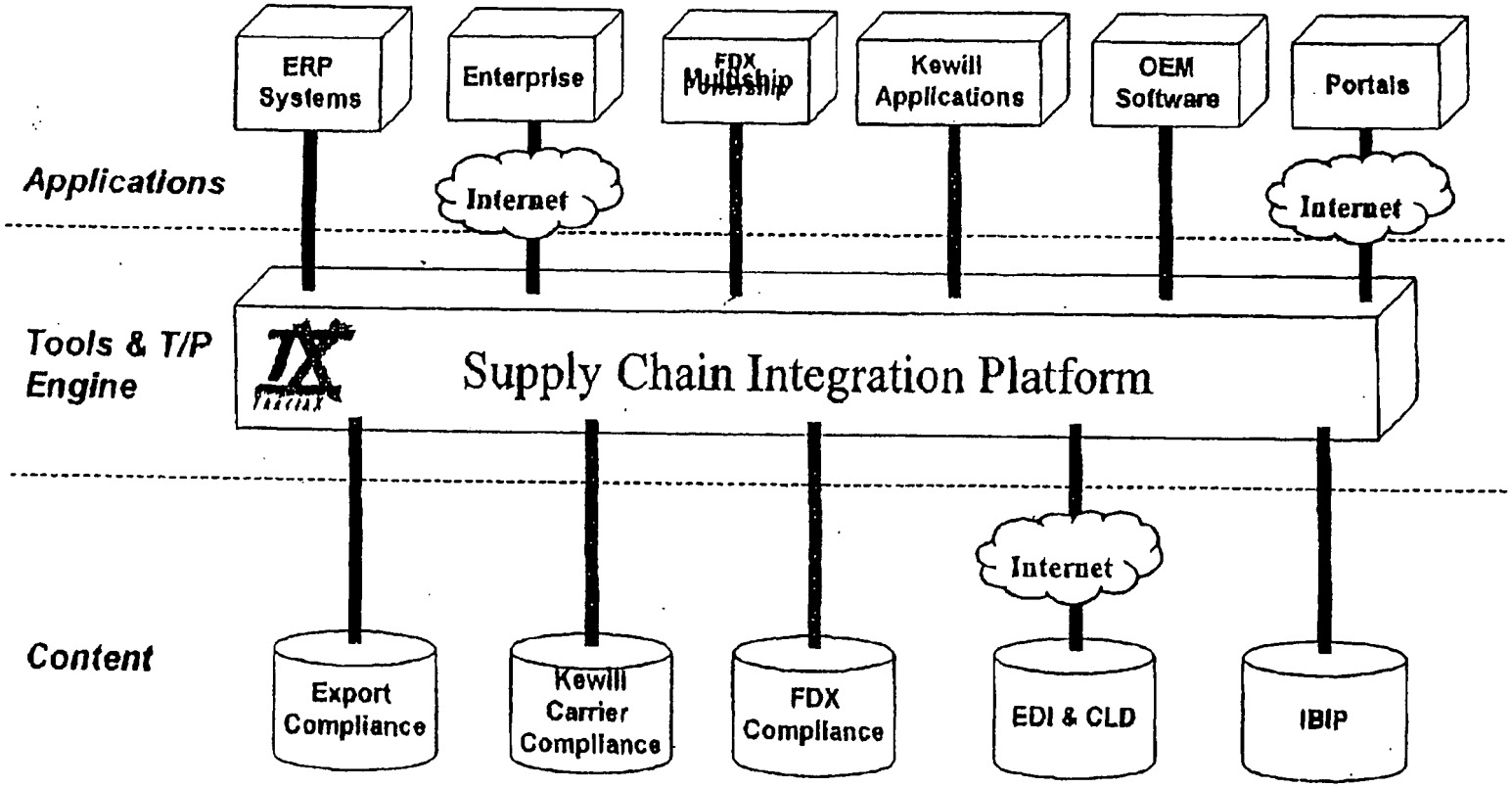
Enterprise Shipping Architecture (KShip



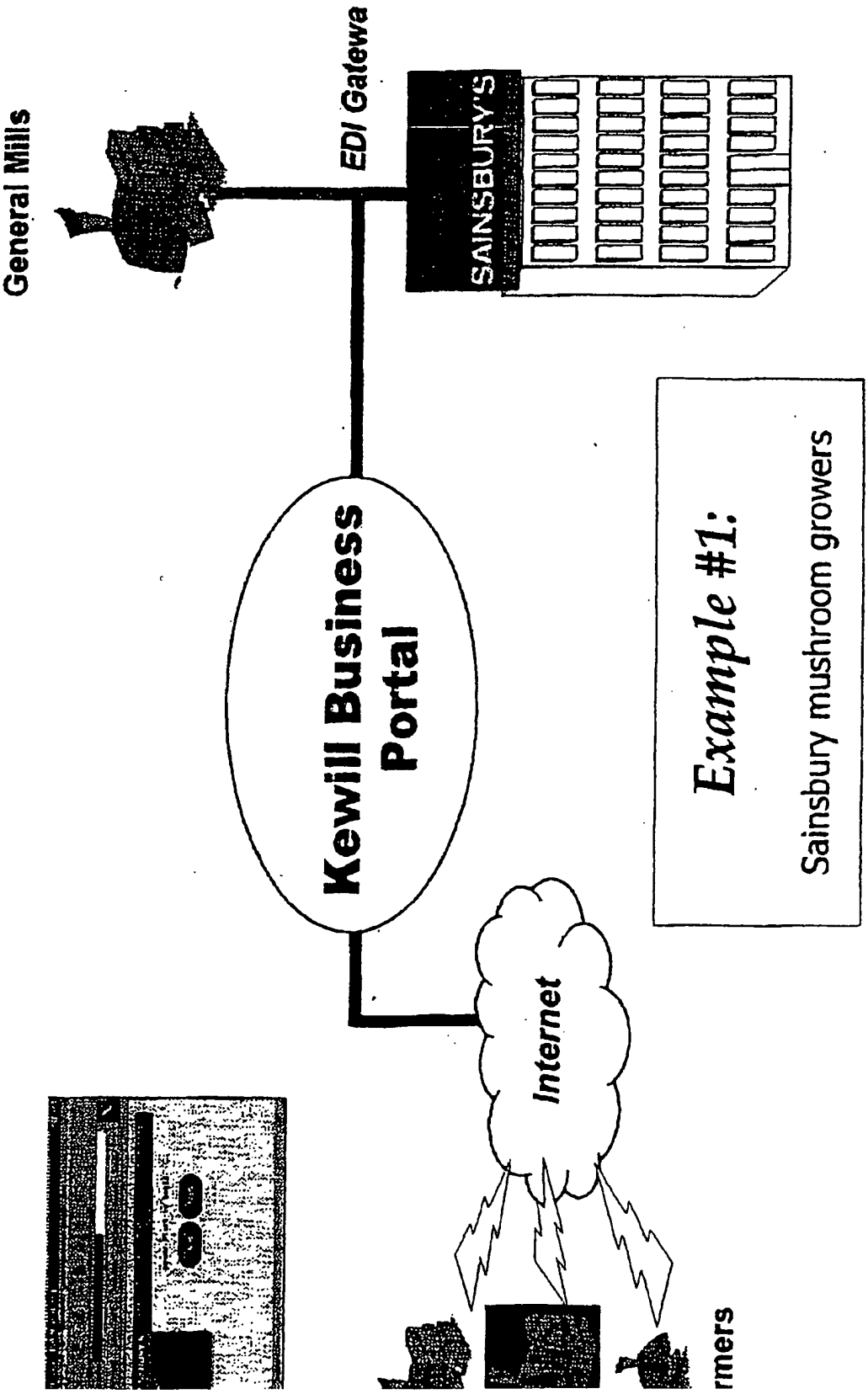
"KShip" Benefit

- Browser based user interface
  - Easy access throughout the enterprise
  - Lower training requirements
- Front Office
- Scalable N-Tier architecture
- Distributed processing
- Larger numbers of users

New Architecture Overview



Example Pack Applicatio
Order Header information
der/Carton Detail information


General Mills
EDI Gatewa
SAINSBURY'S
Kewill Business Portal
Internet
Example #1:
Sainsbury mushroom growers
rmers

Roles and Responsibilities

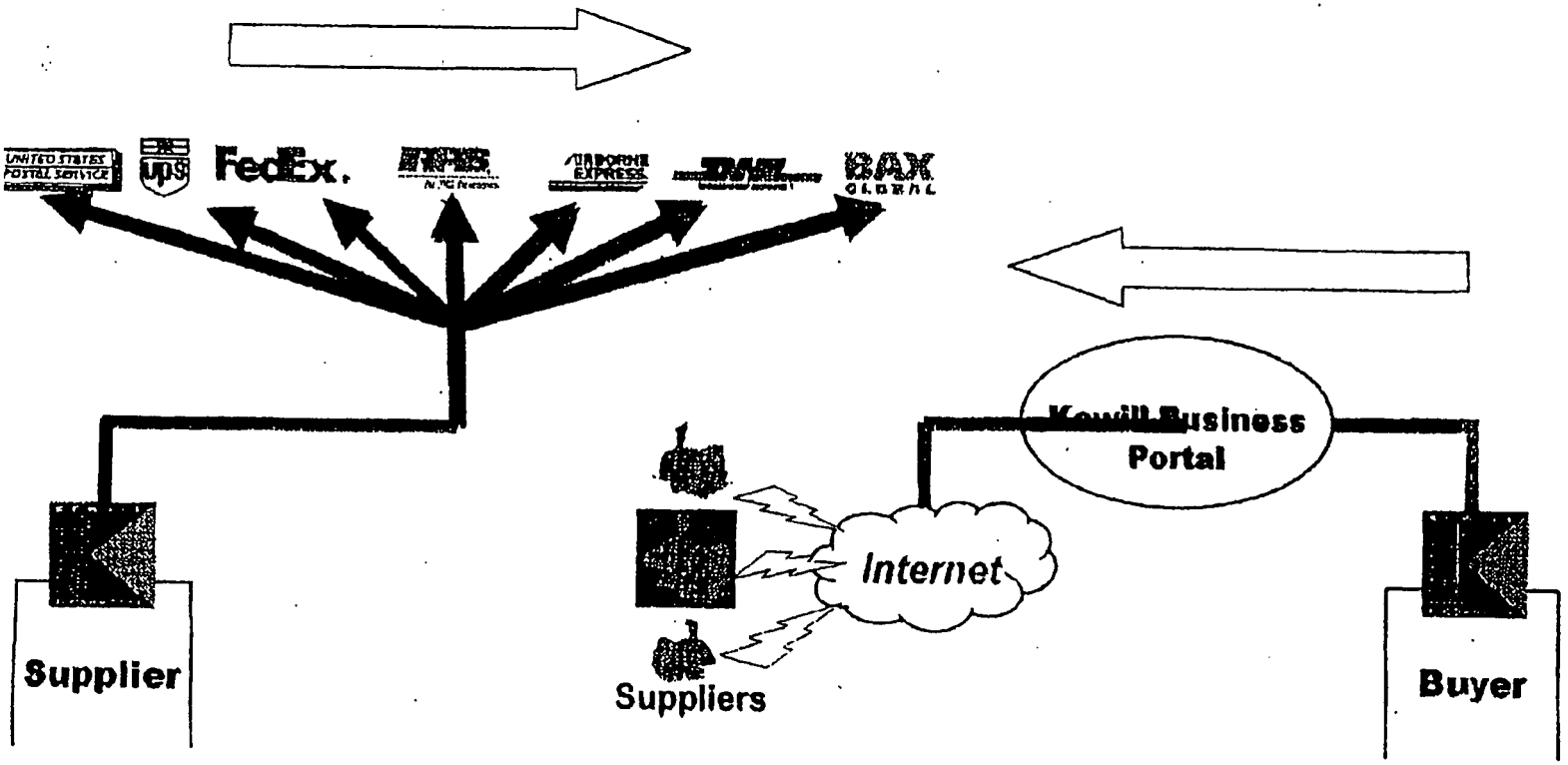
Hub Does

- Purchases server & hardware
- Endorses solution to "spokes"
- Actively promotes
- Provides 1st level support

We do

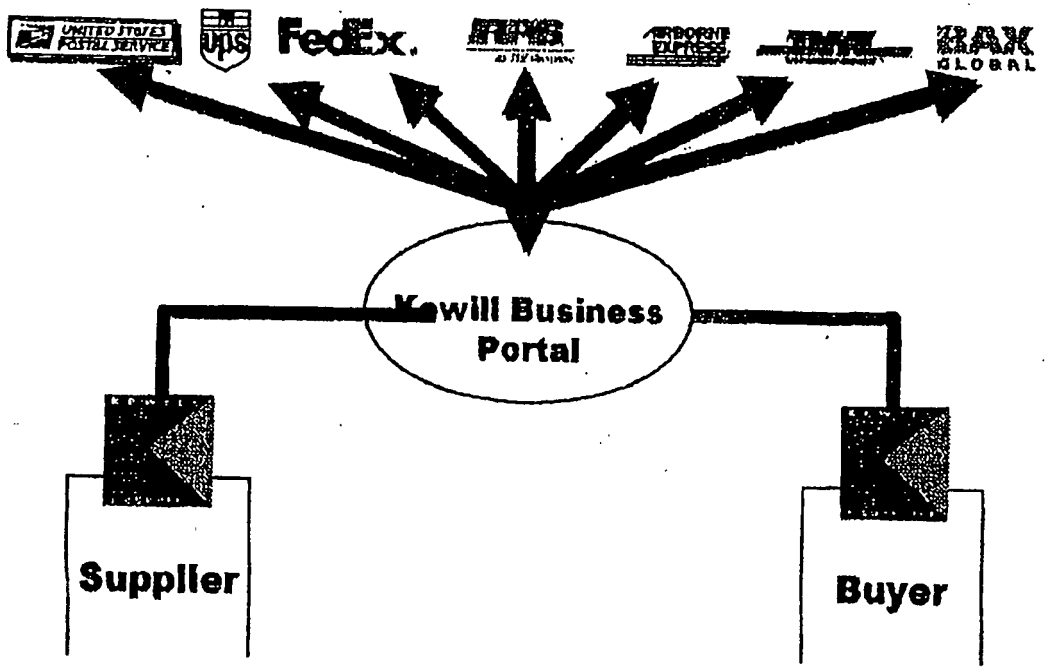
- Develop application
- Host application
- Maintain application
- Bill subscriptions
- Provide account mgmt.
- Sell value-added products and services
- Provide 2nd level support

Kewill is merging the two technologies ..



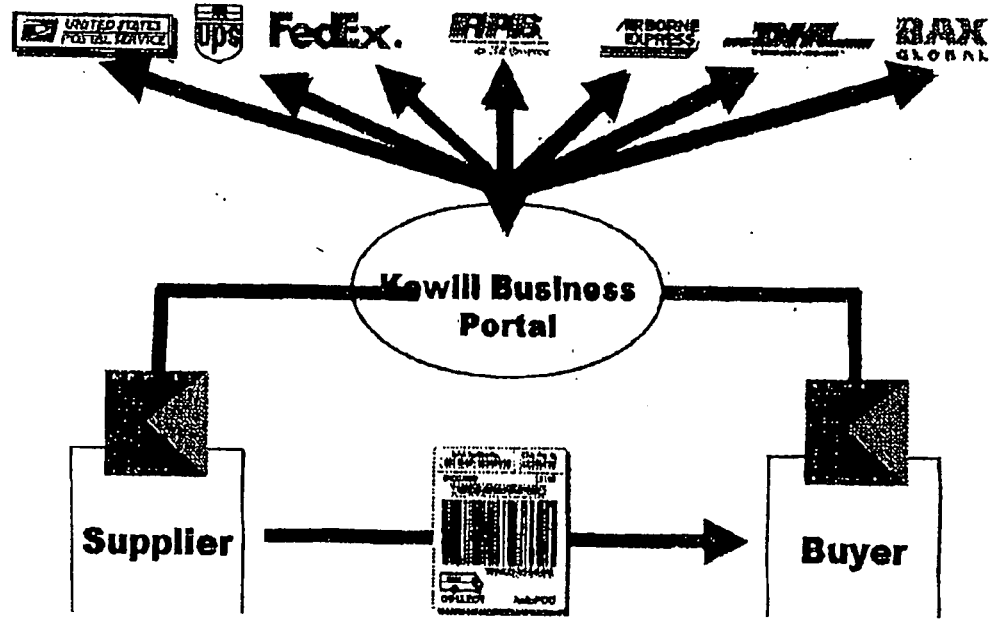
...to create "Supply Chain Visibility

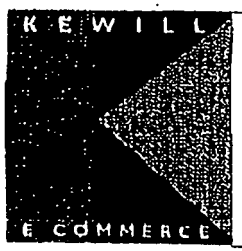
The Kewill Business Portal will link shippers, carriers, and consignees to integrated supply chain communities.



"Supply Chain Visibility

Provide buyers with the ability to "see" inbound goods.



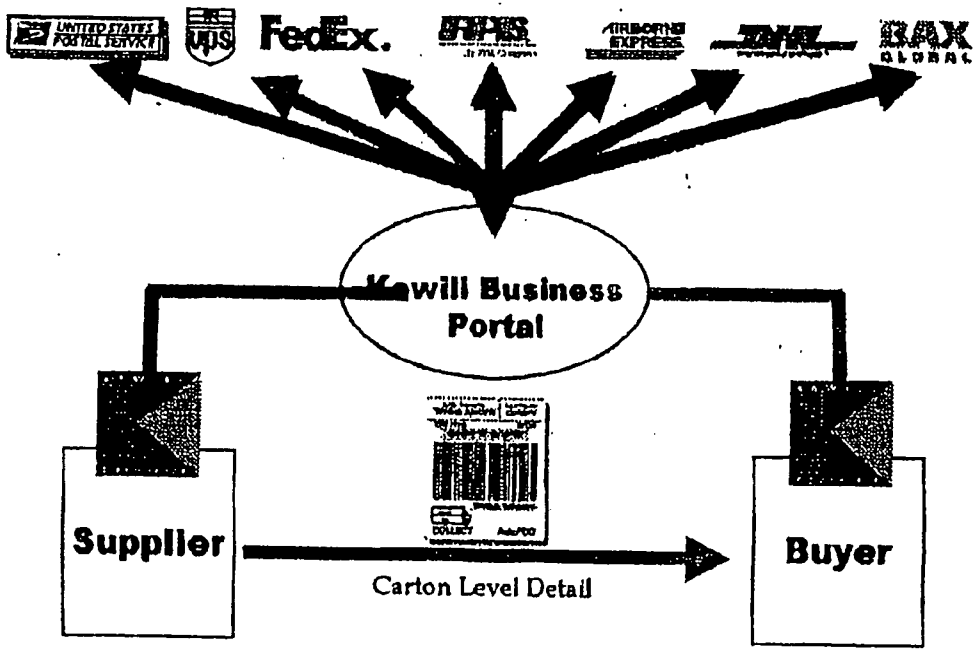


What is the demand for Carton Visibility

- Trend: smaller, more frequent shipments (Internet-driven)
- Need to know "*What's inside* the box?"
  - Need to automate receiving at DCs and Stores
  - Retailers with $1.5 billion on the dock
  - Failure to verify carton contents on supplier end
  - Failure to label properly on supplier end
  - Parcels separated in transit and arrive at different times (accept?)
  - Carrier tracking provides no content
  - ASNs: low compliance %, arrive late, failure to verify contents
  - Costly, inefficient, inaccurate: defeats purpose of supply chain

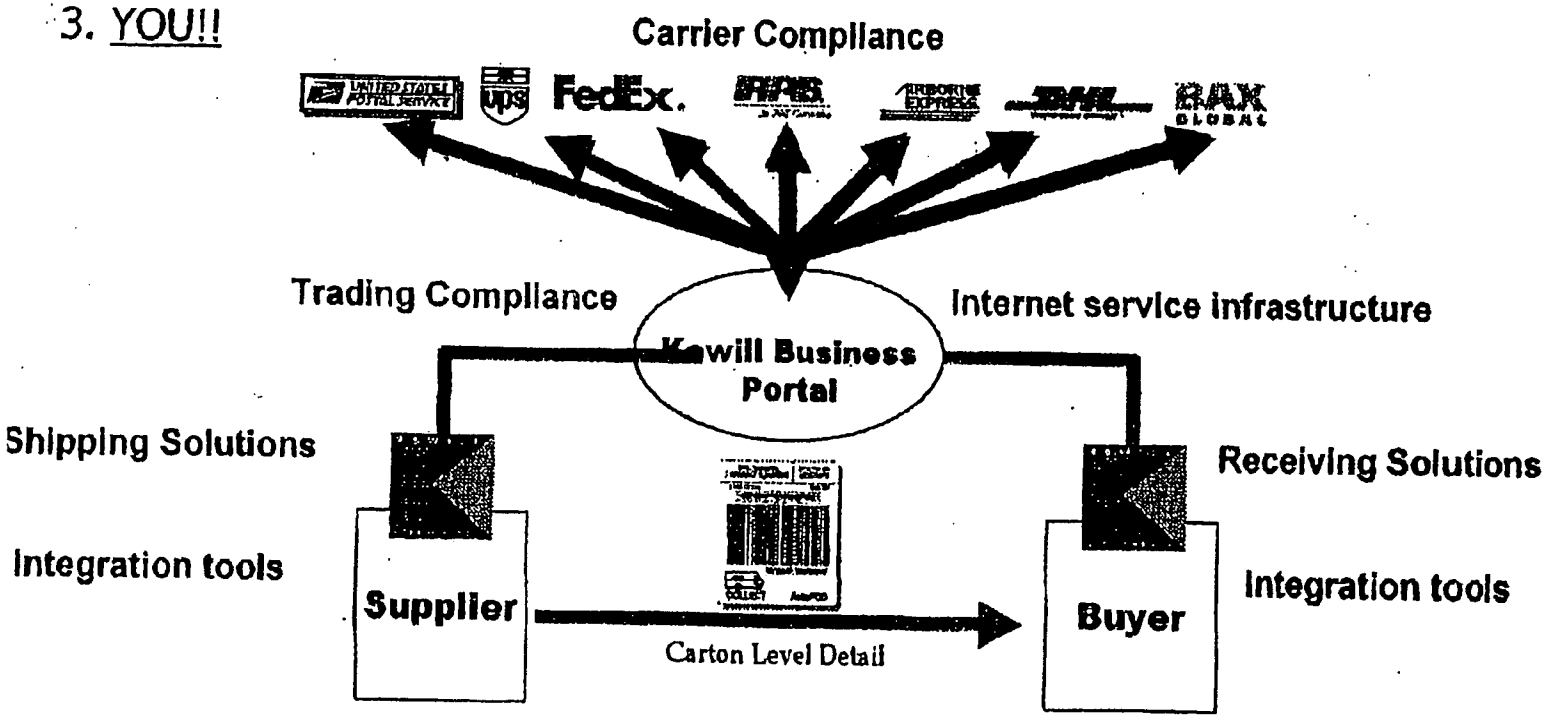
How can we solve the problem?

Provide end-to-end solution: from shippers to consignees

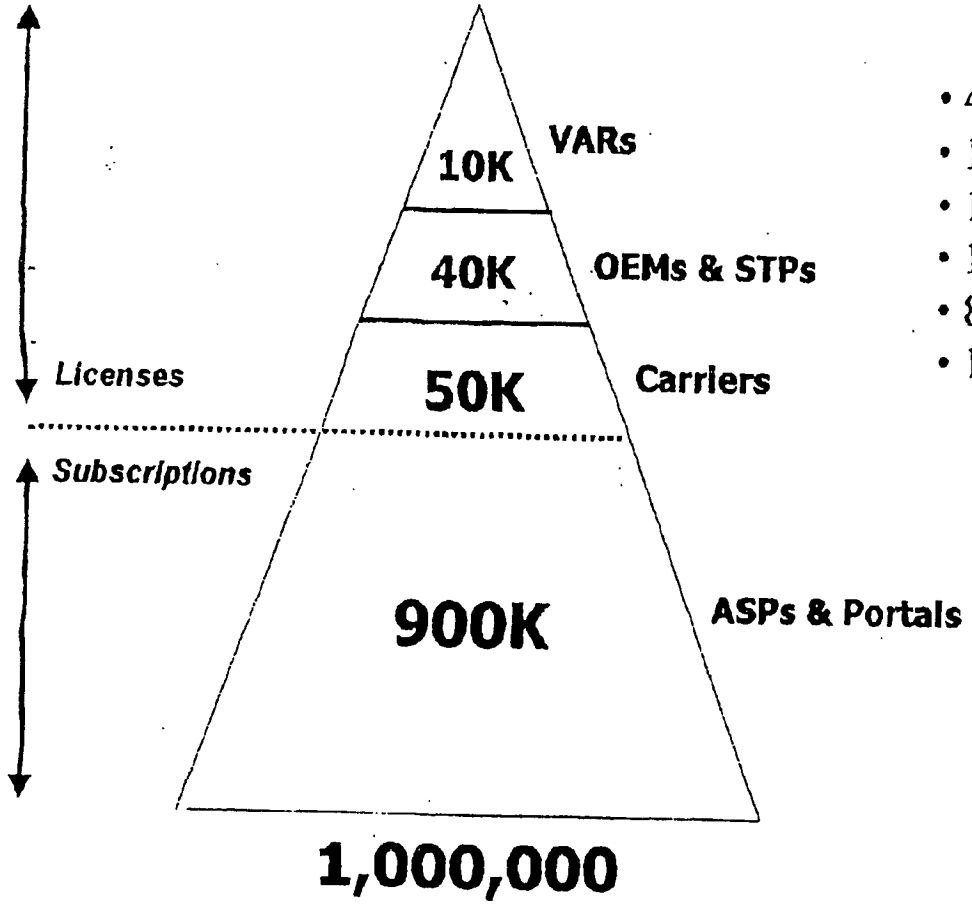


What is our market advantage?

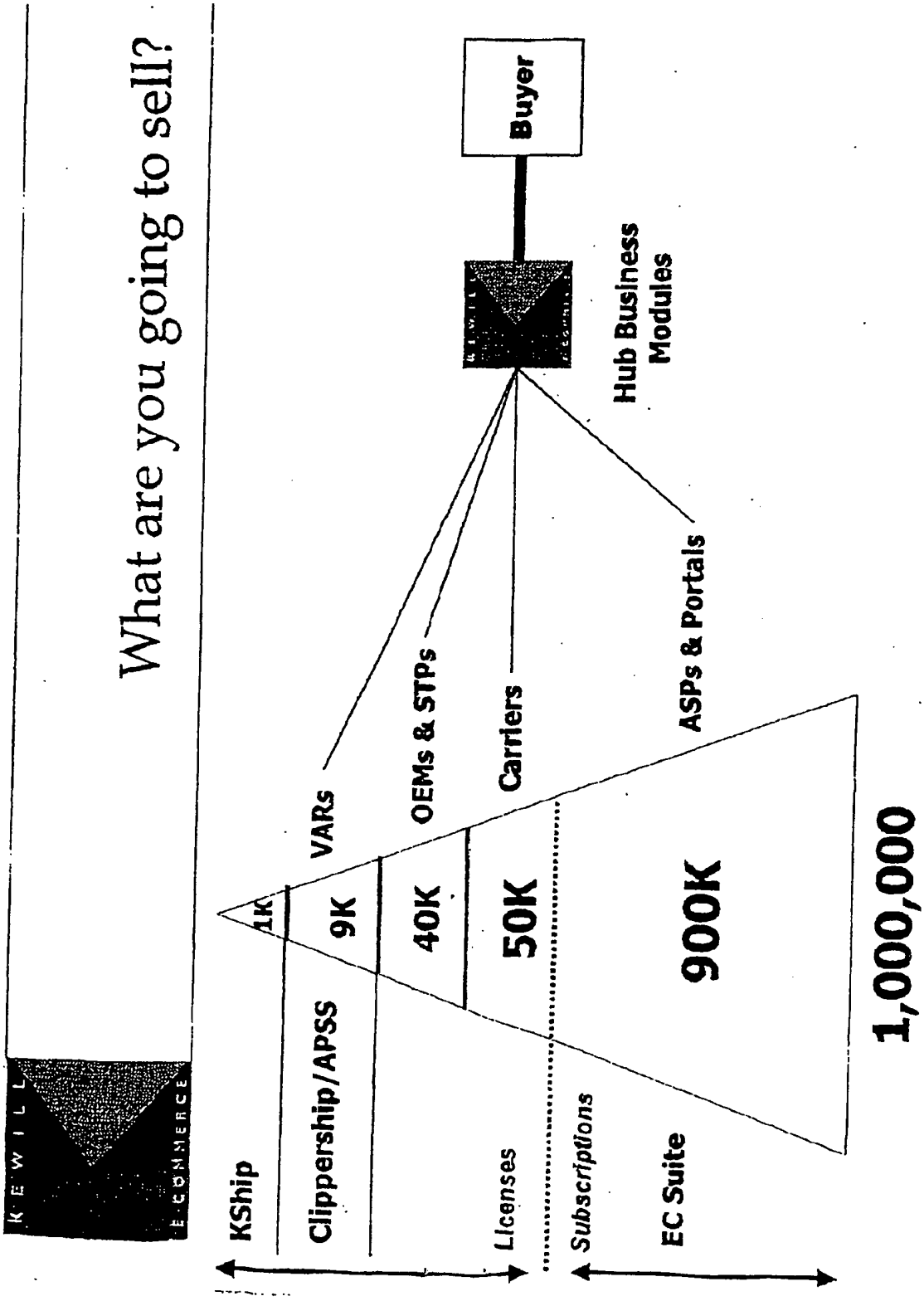
1. Unique combination of carrier and trading technology
2. Achieving critical mass
3. YOU!!

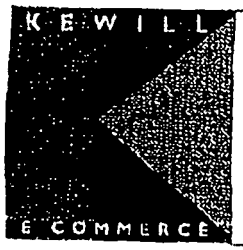


Who are you going to sell to?



- 44.6 million businesses in the US
- 1.7 million businesses 10+ employees
- 1.7 million postage meter users
- 1 million FedEx users
- 880K RPS consignees
- 100,000 EDI users


What are you going to sell?
KEWILL ECOMMERCE
KShip
Clippership/APSS
Licenses
Subscriptions
EC Suite
1K
9K
40K
50K
900K
1,000,000
VARs
OEMs & STPs
Carriers
ASPs & Portals
Hub Business Modules
Buyer



Business Portal Functional Framework

Supervisor

Common Components

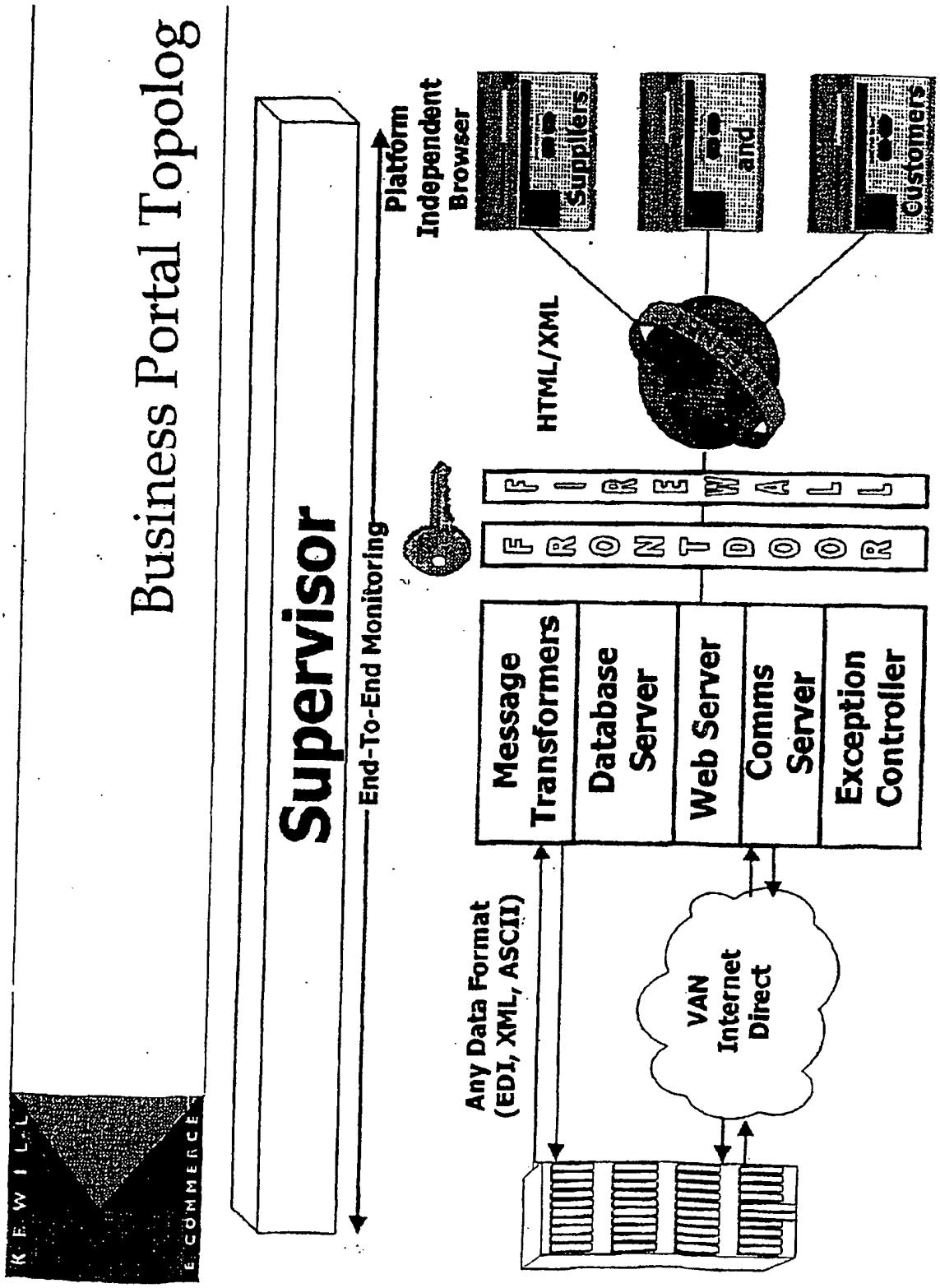
Administration	Security	Scheduled Tasks	Support
Housekeeping	Reporting	E-mail Gateway	Console/Pager Alerts

Parameter Based Components

Orders	Invoices	Advance Ship Notice	Delivery Notification

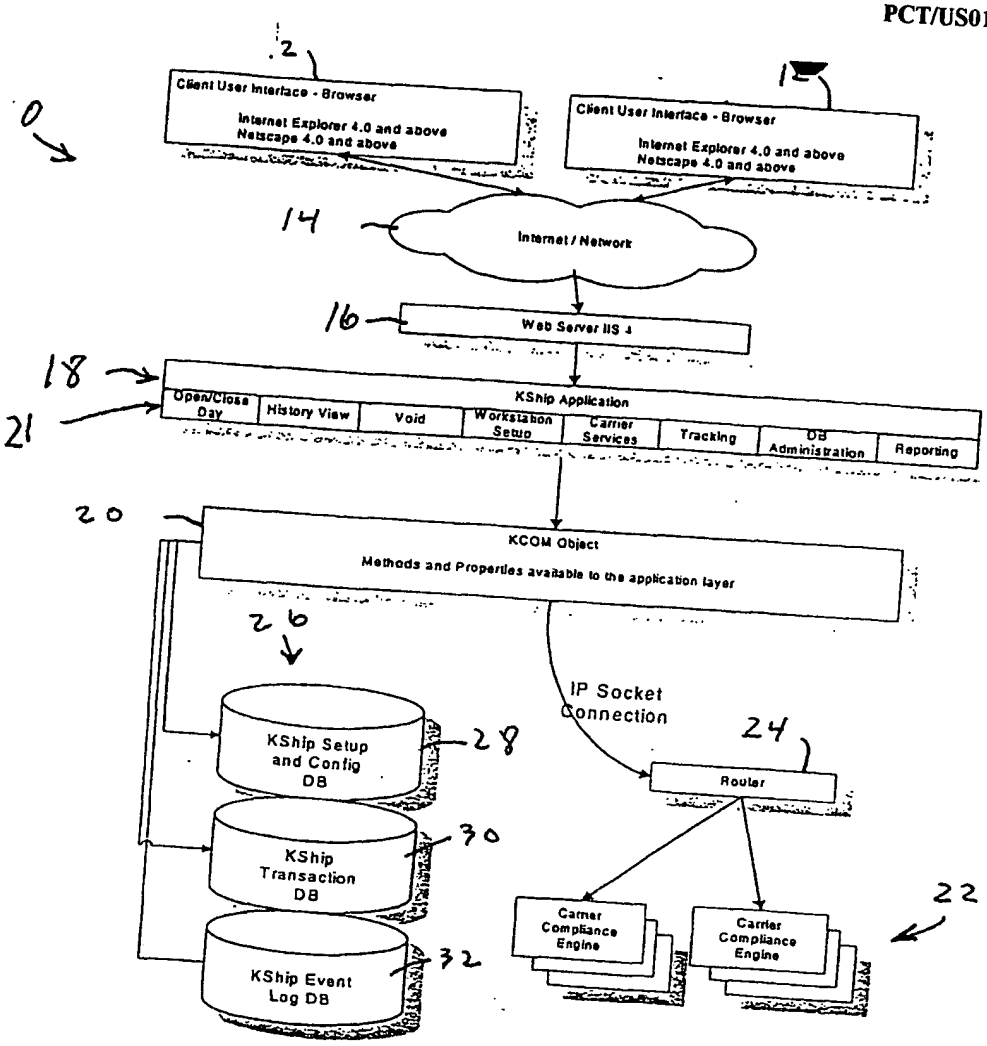
Enterprise Specific Components

Toys R Us	C&A	Siemens	Sainsbury's


Business Portal Topolog
KEWILL
ECOMMERCE
Supervisor
End-To-End Monitoring
Platform Independent Browser
Suppliers
and
Customers
HTML/XML
FIREWALL
FRONTDOOR
Message Transformers
Database Server
Web Server
Comms Server
Exception Controller
Any Data Format (EDI, XML, ASCII)
VAN
Internet
Direct

Demo Hub Solution

Generic CL
...Carton Level Detail
is the ability to
actually tell "What's i
the box"
KEWILL
E COMMERCE


Client User Interface - Browser
Internet Explorer 4.0 and above
Netscape 4.0 and above
Client User Interface - Browser
Internet Explorer 4.0 and above
Netscape 4.0 and above
Internet / Network
Web Server IIS 4
KShip Application
Open/Close Day
History View
Void
Workstation Setup
Carrier Services
Tracking
DB Administration
Reporting
KCOM Object
Methods and Properties available to the application layer
IP Socket Connection
Router
KShip Setup and Config DB
KShip Transaction DB
KShip Event Log DB
Carrier Compliance Engine
Carrier Compliance Engine

F161

Detailed "KShip" Architecture Diagram

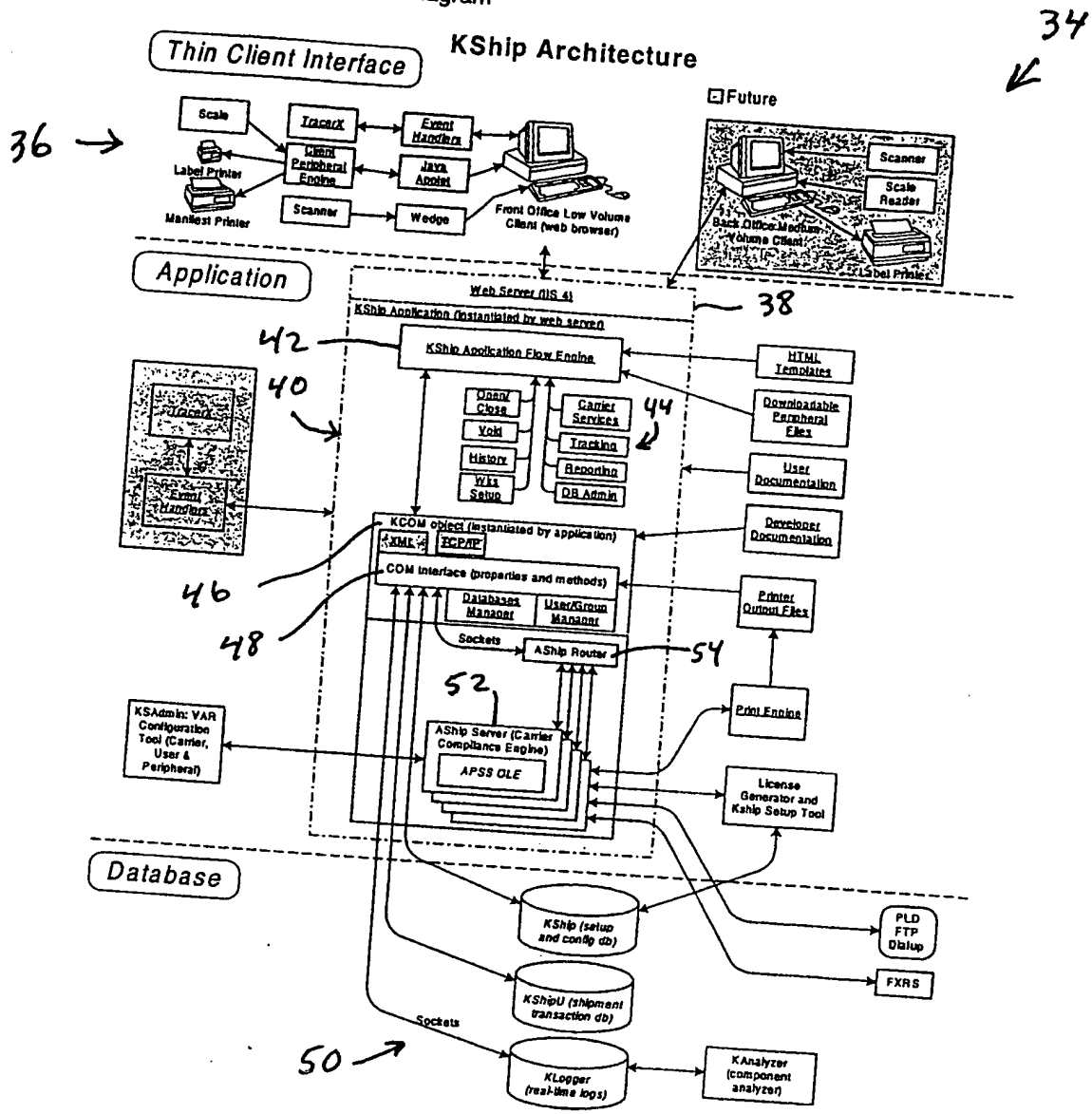


FIG 2

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